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A new species of *Phlyctis* (*Phlyctidaceae*) from China

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Abstract —A new *Phlyctis* species, *P. subargena*, characterized by a sorediate thallus, clustered apothecia and 2-spored asci, is described from north-central China.

Key words — lichen, ascomycetes, Asia, taxonomy

Introduction

After Flotow (1850) established the lichen genus *Phlyctis* (Wallr.) Flot., the genus was expanded to include taxa formerly placed in *Phlyctomia, Phlyctella,* and *Phlyctidia* (Galloway & Guzmán 1988). Following phylogenetic analyses of molecular data, *Phlyctis* was moved from the *Lecanorales* to the *Ostropales* (Wedin et al. 2005, Miadlikowska et al. 2006). *Phlyctis* species are morphologically characterized by crustose thalli; small innate or subimmersed apothecia; large, colourless, and septate or muriform ascospores, 1–2 or 8 per ascus; and globose green algae as photobionts (Purvis et al. 1992, Brodo et al. 2001, Tønsberg 2004, Galloway 2007). *Phlyctis* species contain one or several of the following depsidone acids: stictic, constictic, norstictic, connorstictic, hypostictic, salazinic, psoromic, neopsoromic, and protocetraric (Galloway & Guzmán 1988).

Phlyctis contains approximately 12 species worldwide (Kirk et al. 2008), but only *Phlyctis schizospora* Zahlbr., from Hubei Province, has been reported from China (Chen et al. 1989, Wei 1991). During our study of *Phlyctis* collected from Gansu Province, an interesting *Phlyctis* species new to science was found.

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Materials and methods

The specimens studied were collected from Gansu Province, China, and are preserved in SDNU (Lichen Section of Botanical Herbarium, Shandong Normal University). The morphology of the lichen specimens was examined using a stereo microscope (COIC XTL7045B2) and a compound microscope (JNOEC XS-213). Lichen substances in all specimens cited were identified using the standardized thin layer chromatography techniques (Culberson 1972). Photos of the thallus and ascospores were taken under OLYMPUS SZX12 with DP70.

Taxonomy

Phlyctis subargena R. Ma & H.Y. Wang, **sp. nov.** Fig. 1

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Species acido norstictico, sporis 2nae et sorediis copiosis a congeneribus diversa.

Type collection: CHINA. Gansu province, Longnan, Wenxian Co. Qiujiaba, alt. 2450m, on bark, F. Yang, 20070050, 2 August 2007. (**Holotype** in SDNU).

Expanded description —Thallus crustose, 60–120 μm thick, distinctly sorediate; surface arachnoid-byssoid, forming patches, roughened-uneven to irregularly areolate; areolate 0.1–0.2 mm, greenish white; prothallus white at margins and breaks in thallus; soralia usually paler than thallus, powdery to granular, coalescing to form diffuse, irregular patches. Apothecia frequent, 0.1–0.3 mm in diam, 3–8(–10) clustered, immersing in thalline sorediate patches; disc reddish-brown, rounded to irregularly, plane, usually with white pruina; exciple poorly developed. Epihymenium yellow-brown, up to 30 μm thick; hymenium colourless, up to 130 μm thick, hypothecium pale to light brown, up to 30 μm thick; paraphyses slender, simple; asci broadly clavate, 110–150 × 32–40 μm, 2-spored; ascospores hyaline, muriform, 42–78 × 30–42 μm; I–. Photobiont green, globose, 12–18 μm in diam.

Chemistry — Cortex K+ yellow, C–; medulla K+ yellow-orange-red, C–, PD+ yellow. Constituent in 6 specimens tested: norstictic acid.

Substrate and distribtuion —*Phlyctis subargena* is a corticolous species, found only in the type locality at present.

Additional specimens examined —China. **Gansu**: Longnan, Wenxian Co., Qiujiaba, alt. 2450m, on bark, 2/VIII/2007, F. Yang 20070024, 20070043, 20070045; alt. 2350m, on bark, 3/VIII/2007, F. Yang 20070080; alt. 2350m, on bark, 5/VIII/2007, F. Yang 20070381, 20070383-1(SDNU).

Comments —The presence of norstictic acid, abundant soredia, and two spores per ascus distinguishes *Phlyctis subargena* from all other *Phlyctis* species. *Phlyctis agelaea* (Ach.) Flot., *P. chilensis* D.J. Galloway & Guzmán, *P. oleosa* Stirt., *P. speirea* G. Merr., *P. uncinata* Stirt. and *P. argena* (Ach.) Flot.

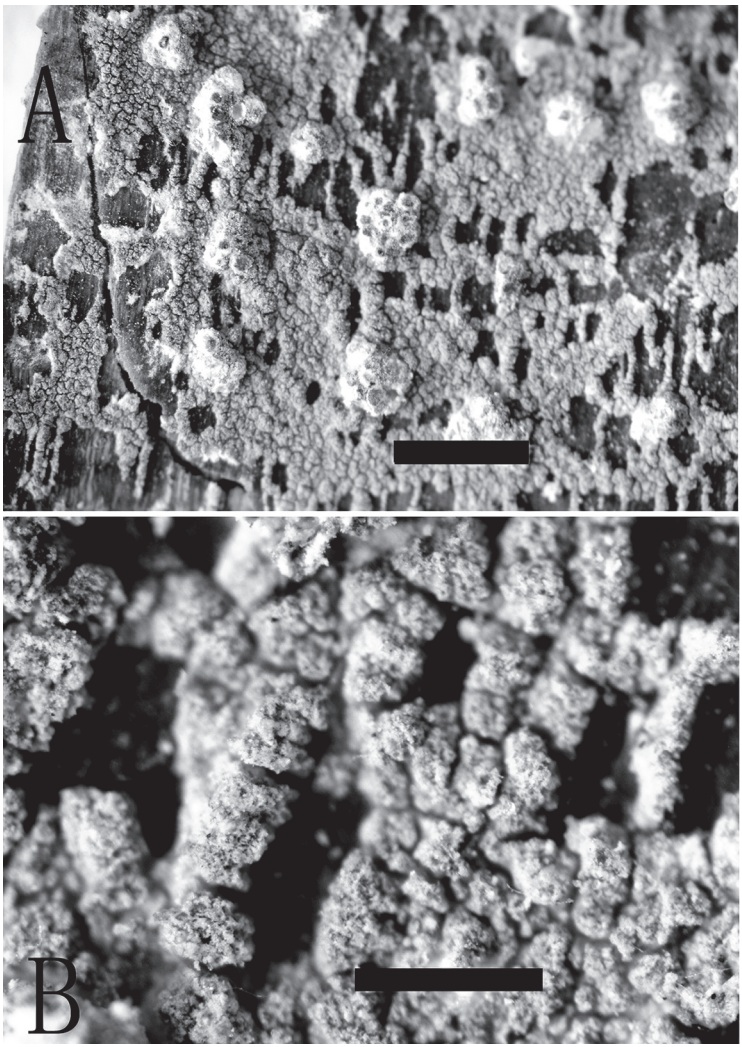

Fig. 1. *Phlyctis subargena* (holotype). A. Thallus (bar = 2 mm). B. Soralia (bar = 200 μm).

all contain norstictic acid. However, the former five are esorediate. Although *P. argena* is distinctly sorediate, *P. subargena* can be clearly separated from the former, which produces rare and solitary apothecia, only one spore per ascus, and larger spores (100–150 × 25–50 μm). In addition, *P. argena* also contains a trace of connorstictic acid, which is absent in *P. subargena*.

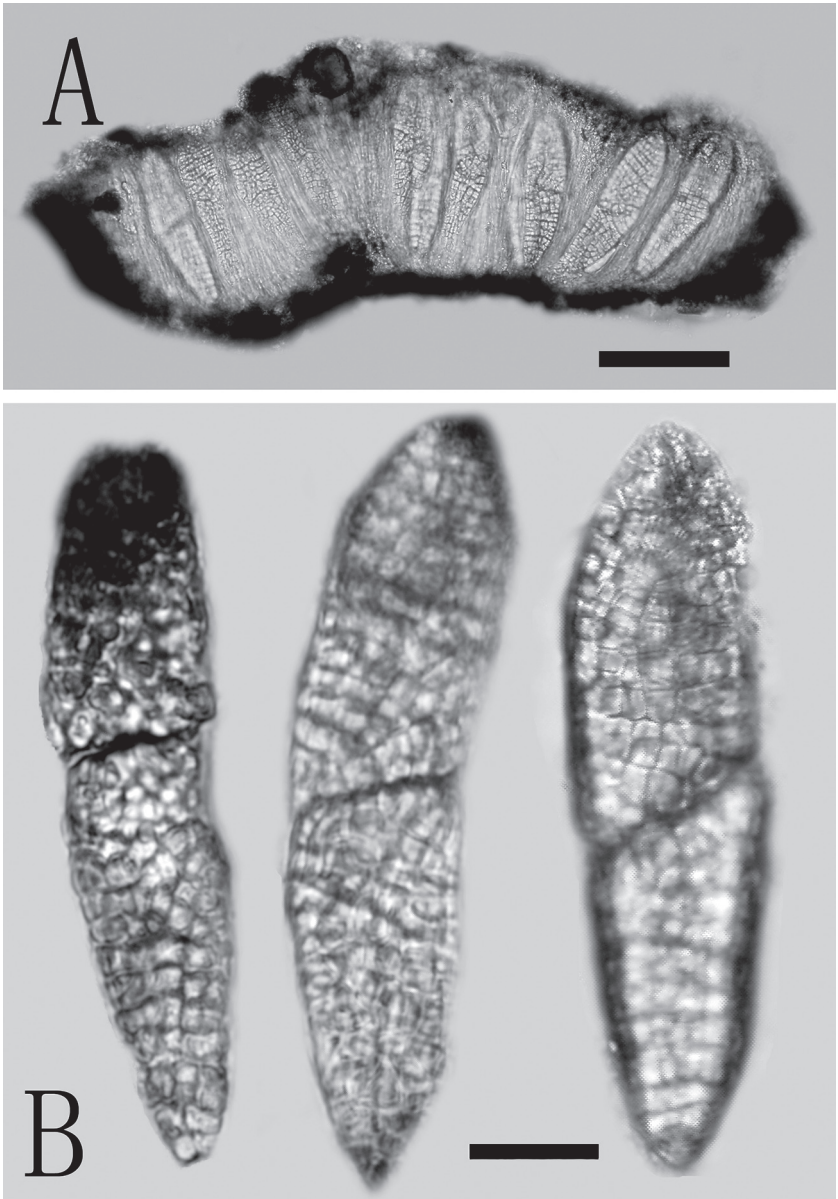

Fig. 1. *Phlyctis subargena* (holotype). A. Apothecium (bar = 50 μm). B. Ascospores, showing 2-spored ascus and muriform shape (bar = 20μm).

Phlyctis subuncinata Stirt., which is also sorediate, differs from *P. subargena* in its fusiform spores and chemistry (stictic and cryptostictic acid vs. norstictic acid).

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